

Project Narrative

Coalition Vision: *Develop a viable and sustainable mariculture industry producing shellfish and aquatic plants for the long-term benefit of Alaska’s economy, environment and communities* ([Alaska Mariculture Development Plan, pg. 8](#)). [In Alaska, mariculture refers to enhancement, restoration and aquatic farming of shellfish and seaweeds.]

Background and State Support: At the request of industry and community stakeholders, in 2016, Alaska Governor Walker created the Alaska Mariculture Task Force (Task Force) by [Administrative Orders #280](#) and [#297](#). Between 2016 and 2021, the Task Force created an industry-led, coordinated effort, utilizing public-private partnerships, and completed a [statewide comprehensive plan](#). These are also principles built into successful cluster development. Consequently, building upon the successful work of the Task Force, by expanding the number of participants through our BBB Coalition and Partners, along with the infusion of public and private capital, will allow Alaskans to attain their vision of mariculture development on an accelerated timeline.



Infographic from: [In Brief – Alaska Mariculture Development Plan, 2018, produced by the Alaska Mariculture Task Force.](#)

The Economic Opportunity of Alaska Mariculture:
Goal: Grow a \$100 million per year mariculture industry in 20 years. This 20-year goal is based on projections from an economic analysis completed in 2017 ([Alaska Mariculture Initiative – Economic Analysis to Inform a Comprehensive Plan – Phase 2](#)). Projections from this 20-year goal, adjusted for inflation **could yield a mariculture industry of \$1 billion in 30 years, given an industry-led, coordinated effort, utilizing public-private partnerships, and a statewide comprehensive plan designed to reach this goal.**

The Target Region: coastal Alaska; a statewide approach is important for this cluster due to the location of the waters appropriate for mariculture development, as well as the existing seafood industry participants, infrastructure, and vessels which already operate and move across communities to access fishery resources.

Lead Institution: The key coalition member will be Southeast Conference (SEC) and SEC staff, Juliana Melin, will serve as the Regional Economic Competitiveness Officer.

Coalition Members: Southeast Conference - lead (SEC), Prince William Sound Economic Development District (PWSEDD), Kenai Peninsula Economic Development District (KPEDD), Southwest Alaska Municipal Conference (SWAMC), State of Alaska, Central Council of the Tlingit and Haida Indian Tribes of Alaska (CCTHITA), Alaska Mariculture Alliance (AMA), Alaska Sea Grant (ASG), Mariculture Research and Training Center (MRTC), Alaska Fisheries Development Foundation (AFDF), University of Alaska (system-wide), Alaska Blue Economy Center (ABEC), and Alaska Longline Fishermen’s Association (ALFA).

The Coalition Members listed above are a broad network of entities that represent the following target stakeholder groups across coastal Alaska: regional economic development districts (EDDs), the State of Alaska, Alaska Native tribes and corporations, local governments, shellfish and seaweed hatcheries, private businesses (i.e. mariculture farmers, commercial fishermen, and seafood processors), and the University of Alaska and its network of training and workforce development centers.

Additionally, many of these entities have been active or supportive of the development of mariculture through their membership in the ***Alaska Mariculture Alliance (AMA)***. The AMA is the successor organization of the previous Mariculture Task Force appointed by Governor Walker and with continued support by Governor Dunleavy. The mission of the AMA is to “develop and support a robust and sustainable mariculture industry, producing shellfish and aquatic plants for the long-term benefit of Alaska’s economy, environment and communities”. The membership of the AMA includes 59 full members, 7 ex-officio members from state or federal government, and associate members (supporting businesses or non-profits which are aligned with the purposes of the AMA) ([AMA Bylaws, pgs 1-2](#)).

Potential Component Projects - approximately \$49 million for implementation of Phase 2:

(the following components represent priority recommendations from the [Alaska Mariculture Development Plan](#), [Five-Year Action Plan](#), and the [Final Report to Governor Dunleavy](#))

1) Alaska Integrated Hatchery Network – solve the chicken-or-egg problem of supply and demand of shellfish and seaweed seed, by integrating and maximizing existing capacity, as well as building additional hatchery and nursery facilities – *implemented by AMA, AFDF - \$15 million*

2) Capital to expedite private investment in mariculture development – incentivize private investment by reducing risk in developing businesses in the new mariculture sector through creative financing strategies, matching grant programs, and loan participation in existing revolving loan fund programs – *implemented by SEC, KPEDD, PWSEDD, State of Alaska - \$15 million*

3) Workforce development to support the mariculture industry – expand existing programs and create new programs within the University and Alaska Sea Grant network, including cooperative programs with tribes and high school curriculum – *implemented by ASG/MRTC, UA – system-wide, CCTHITA - \$10 million*

4) Vessel energy audits and efficiency improvements – provide outreach, training, energy audits, demonstrate electric conversions, and provide 25% grants to match loans for energy improvements – *implemented by ALFA, AFDF, SWAMC - \$3 million*

5) Innovation Fund – create technology innovation competition for specific challenges to mariculture development – *implemented by ABEC - \$2 million*

6) Product and market development – build capacity to develop innovative new products from mariculture; grow market demand for new mariculture products, including carbon removal products – *implemented by ASG/KSMSC, ABEC - \$2 million*

7) Coordination between industry, university, government & Alaska Native participants – build existing efforts to coordinate priorities and activities across stakeholders – *implemented by AMA, MRTC, State of Alaska - \$1 million*

8) Public education & outreach to improve social license – continue to improve public understanding and acceptance for mariculture development; distribute research-based information regarding impacts – *implemented by SEC, PWSEDD, KPEDD, SWAMC, AMA, CCTHITA - \$1 million*

Metrics (annual): Production of shellfish and seaweed products (volume and value), jobs created and retained (#), seed (# shellfish, # feet seeded line), species commercially grown (#), species experimentally grown (#), new product forms (#), companies (#), carbon dioxide removed (tons), tribes/Alaska Native entities and rural coastal Alaska communities involved in mariculture (#), investment in vessel energy efficiency upgrades (\$ and #), reduction of diesel fuel used by industry vessels, attendance at workshops/training/course enrollment (#, including % Alaska Native), AMA meetings (#), mariculture conferences held (#), research and development projects funded (\$), and private sector investment (\$).

Matching Funds for Phase 2: The 20% match required for Phase 2 is expected to be provided from the following non-federal sources: private industry loans through revolving loan funds, a Green Bank, USDA energy efficiency loan program; private investment; grants from non-federal organizations; in-kind contribution of land, facilities and equipment; and Denali Commission-funded mariculture projects.

EDA's Recovery and Resilience Investment Priorities: This proposed economic planning and implementation project aligns with the following EDA investment priorities:

- **Equity:** This project includes a region that will directly and indirectly benefit traditionally underserved populations of Alaska Natives and a geography of rural Alaska communities with demonstrated, historical underservice. Alaska is home to 40% of the total U.S. tribal population, and over 40 communities in the coastal Alaska region are traditional Alaska Native villages where over 50% of the population is Alaska Native. According to July 2020 census data, of the total 221,682 people that live in the 25 Borough/Census Areas in the coastal Alaska region (not including upper Cook Inlet), 82,608 or **37%** identify as Alaska Native or American Indian either alone or in combination with other racial designations.¹ The geography is comprised of almost a half-million square miles,

¹ <https://live.laborstats.alaska.gov/pop/estimates/data/AgeBySexByRaceAlCHispBCA.xls>

within which only 45 square miles are designated as urban.² Additionally, this geography or region contains [thirteen of Alaska's 25 Qualified Opportunity Zones](#) which are federally designated distressed, low income communities, many of which have experienced a lack of investment for decades.

- Recovery and Resiliency:** Investment in coastal Alaska's mariculture cluster will provide resilience to economic shocks from the decline of three important industries due to either climate change or COVID-19: seafood, timber, and tourism industries. The seafood industry is Alaska's largest private-sector employer (over 60,000 jobs), and has been hit with recent fish stock disasters scientifically linked to climate change which caused either severe reduction or closure of commercial harvests (e.g. Gulf of Alaska cod stocks down in 2018 causing 80-100% reduction of harvests, King and snow crab stocks down in 2021 causing 70-100% reduction of harvests). The timber industry was once a major employer for many of Alaska's coastal communities (over 4,000 jobs) which has faded due to changing federal climate policies. The tourism industry was decimated by the COVID-19 pandemic, with cruise ships down 100% and 90% in 2020 and 2021, respectively, and a loss of 3,800 year-round-equivalent tourism jobs in 2020. Investment in Alaska's mariculture industry will provide economic opportunity for coastal Alaskans who experienced economic shocks in these three primary industries and support long-term resiliency through economic diversification and mitigation of climate change (see Green Products below).
- Manufacturing:** A recent economic analysis ([Alaska Mariculture Initiative – Economic Analysis to Inform a Comprehensive Plan – Phase 2](#)) projected the addition of 1,500 jobs in the next 20 years in the growing, harvesting, and manufacturing of mariculture products given an industry-led coordinated effort, utilizing public-private partnerships, and a statewide comprehensive plan designed to reach this goal – a blueprint for this project being proposed.
- Environmentally-Sustainable Development (Green Products):** Growing seaweed as a raw material source for food, fertilizer, agricultural feed, biofuel, and bioplastics (as well as other potential end products) contributes to greenhouse gas mitigation. Seaweed is considered an effective carbon dioxide removal strategy for the [oceans which have absorbed around 40% of the world's CO2 discharged between 1800 and 1995](#). Additionally, the vessel energy efficiency and electric conversions component of this project will reduce reliance on diesel fuel, thereby reducing greenhouse gas emissions and improving the carbon footprint of Alaska's fleet of commercial vessels.

Barriers to Implementation & Mitigation

Chicken-Or-Egg: Right-sizing infrastructure expansion with industry needs - When developing a new industry, it is difficult to accurately scale and time the level of infrastructure expansion

² <https://internal.stacker.com/stories/13606/most-rural-boroughs-alaska>

required to meet industry needs without exceeding or underestimating those needs. To mitigate this, this team will actively coordinate to avoid silos. The components in this project incorporate an integrated approach, because the success of each component shares an interdependent causal nexus with each other. As structured, this combination of components will be a catalyst to launch long-term and stable economic growth in the mariculture cluster.

Climate change and disruption – Climate change is projected to disrupt all aspects of our lives. Alaskans and the Alaska seafood industry have already experienced disruption to commercial fishing of Pacific cod stocks in the Gulf of Alaska and crab stocks in the Bering Sea. However, resilience to the impacts of climate change is central to this project. Mariculture development is intended to mitigate and/or reduce both the negative environmental and economic effects of climate change. Growth of seaweed on a large scale is considered an effective carbon dioxide removal strategy for the [oceans which have absorbed around 40% of the world's CO2](#) discharged between 1800 and 1995, is [projected to help meet United Nations Sustainable Development Goals](#), and helps mitigate localized ocean acidification (OA). This project will also reduce diesel used in commercial vessels in the region through energy efficiency improvements and electric conversions. Therefore, this project will help to slow climate change and reverse some of its environmental impacts. Additionally, mariculture will provide economic diversification to help mitigate negative economic impacts due to reduced fish stocks, upon which coastal Alaskans rely for jobs, economic opportunity and a local tax base.

Access to capital for a new industry – New industries and businesses in those industries have a more difficult time securing investment capital from traditional lenders that want to see a history of financial performance for those businesses. Other eligibility challenges like operational scale, access to collateral and even awareness of the different funding options add to this barrier. Because the industry is relatively young in the state, it is a moderately high-risk investment due to long grow-out periods for some species, learning curves with new operational techniques, and an underdeveloped market (particularly for seaweed). This project will address this barrier through components #2, 3, and 6 which aim to incentivize private investment by reducing risk in developing businesses in the new mariculture sector.

Timeline:

Phase I – Planning and technical assistance for Phase I will be fully expended over a 12-month period, with an application for Phase II prepared and submitted by March 15, 2022, as a key deliverable.

Phase II – Phase II component projects will be implemented through a multi-stage approach over 4 years, with any construction-related activity concluded by March 1, 2027, allowing sufficient time to submit applicable close-out documentation and reimbursement. Years 1-2 for component preparation: feasibility studies, public outreach, program development and pilot launches (including workforce development and capital disbursements), equipment purchases, construction design, stakeholder meetings and outreach. Years 3-4 continue targeted outreach for public awareness of new opportunities, build out of programs, equipment installation, and construction. April 1 – Sept. 30, 2027 close out, final reporting and reimbursement.